

## DRAGONFLY COLLECTING IN INDIA.

BY

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## PART II

(With two text-figures.)

(Continued from page 898 of Vol. XXVIII.)

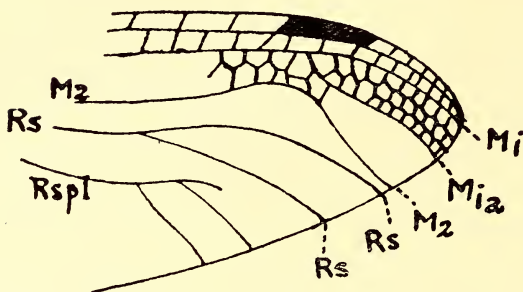


Fig. A.

Fig. A. Diagram of apex of wing showing :—

*Rs* bifurcating as in *Æschna*. *Mii* making an abrupt curve towards the stigma as in *Anax*. Two rows of cells between *Mi* and *Mia* at outer end of stigma as in most species of *Gomphus* (3 rows in *Heterogomphus*). The stigma braced. *Rspl* present.

The present part deals with the key to the whole of the Suborder *Anisoptera*, the key to the remaining Suborder *Zygoptera* forming Part III of this article. (Indian species only.)

I have included all the keys that have appeared in "Indian Dragonflies", but have made extensive alterations, aiming first at simplicity and secondly at deleting all the Mesopotamian species which have appeared in those keys. During the late war, Mesopotamia became politically a part of India, it no longer is so and all the entomologists who went there from this country have now left it so that interest in its fauna has died down. In a zoographical sense its dragonfly fauna had few relations with India and on this ground alone it is better to remove them from our list.

In the key I have added not only all new species which have since been described but also others, the descriptions of which will shortly be published and other species, which although not new, have since been recorded from within Indian limits, thus the list will be practically up to date at the time when it appears in print.

The way new species have come to light during the past two years has been perfectly amazing and serves to show how little work has been done upon the dragonfly fauna of this country. A good number of corrections in the keys has been made, these having been detected in the course of revision. I have also

found the necessity of adding a few more diagrams in this part, to aid the amateur in the working of the key, which as will be seen is mainly a dichotomous one.

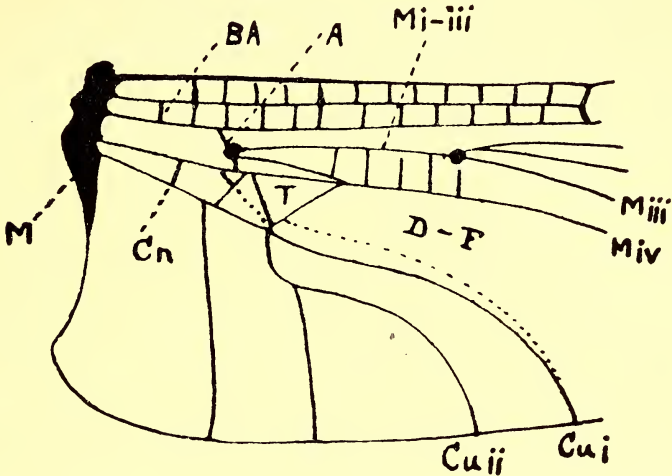


Fig. B.

Fig. B. Diagram of base of wing showing:—

M membrane; Cn=cubital nervure; T=trigone; D-F=Discoidal field; BA=Basal antennodal nervure of second series; A=Arc, *Mi-iii*=the part of *Miii* running between the two dots, that is, from the arc to where the nervure bifurcates.

The trigone is shown as *distal to the arc*, but the dotted line indicates its position if proximal to the arc. *Cui* is shown as arising from the posterior angle of the trigone, but the dotted line indicates its position when arising distad to the angle.

Four nervures are shown lying between *Mi-iii* and *Miv* as in *Heliogomphus*, etc.

Order—ODONATA.

1. { Suborder—*Anisoptera*:—  
 Wings always held more or less horizontally wide open when the insect is at rest, unequal, the hind much broader at the base than the fore; the discoidal cell triangular in shape, often differing in shape in the two wings; eyes variable, contiguous or separated, more often contiguous. Male with two superior anal appendages, the inferior usually fused, the female with only two superior anal appendages, no inferior.  
 Larvæ without caudal gills, rectal gills only .. .. . 2

|    |  |     |  |
|----|--|-----|--|
|    | Suborder— <i>Zygoptera</i> :—  |     |  |
| 1. | Wings held folded together over the back when the insect is at rest (the <i>Lestidæ</i> hold the wings half-open when at rest, <i>Philoganga</i> holds them quite open when at rest); wings similar in shape, the hind sometimes broader than the fore but the base never broadened; the discoidal cell a simple regular or irregular <i>quadrilateral</i> , entire or traversed by one or several nervures, sometimes pointed externally but always four-sided; eyes always well separated; male with two superior and two inferior anal appendages, the female with two inferior appendages only.. |     |  |
|    | Larvæ with two or three caudal gills, sometimes with lateral abdominal gills also, .. .. .   | 198 |  |
|    | Family— <i>Libellulidæ</i> :—  |     |  |
| 2. | Trigones of fore and hind wings dissimilar in shape and placed at unequal distances from the arc; antenodal nervures of first and second series corresponding; labium (lower lip) with a small median lobe and two broad lateral lobes overlapping it; ocelli arranged in a triangle around the vesicle .. .. .  | 3   |  |
|    | Family— <i>Aeschnidæ</i> :—  |     |  |
|    | Trigones of fore and hind wings similar or nearly similar in shape and placed at equal distances from the arc; antenodal nervures of first and second series not corresponding (except for occasional individuals); labium with middle lobe about equal in size to lateral lobes and not overlapped by same; ocelli arranged in a transverse line in front of vesicle .. .. .  | 94  |  |
|    | Subfamily <i>Libellulina</i> :—  |     |  |
| 3. | Anal border of hindwing of male more or less rounded; no auricles on sides of second abdominal segment of male; anal appendages very simple and similar in the genera; body colour nearly always non-metallic; tibiæ of forelegs without a keel-like ridge .. .. .   | 4   |  |
|    | Subfamily— <i>Corduliinæ</i> :—  |     |  |
|    | Anal border of hindwing in the male angulated or excavated (except <i>Hemicordulia</i> ); auricles present on sides of second abdominal segment of male; anal appendages often highly specialized in the genera; body colour metallic; tibiæ of forelegs with a keel-like ridge .. .. .  | 76  |  |
| 4. | Trigone of forewing poorly developed, four-sided due to a bend or angulation in its costal side (anterior side). Loop poorly developed or absent; discoidal field begins with a single row of cells .. .. .  | 5   |  |
|    | Trigone of forewing well developed and only three-sided; loop well developed; discoidal field begins with a two rows of cells .. .. .  | 9   |  |

|     |  |  |    |
|-----|--|--|----|
| 5.  | Genus— <i>Hylæothemis</i> :—   | Trigone of hindwing traversed by a nervure .. <i>Hylæothemis fruhstorferi</i> .  | 6  |
|     |  | Trigone of hindwing free .. .. .   |    |
|     | Genus— <i>Tetrathemis</i> :—   | Loop present but poorly developed ; antenodal nervures to forewing 7-9 in number ; arc between antenodal nervures 1 and 2 .. .. .  | 7  |
|     |  | Genus— <i>Palæothemis</i> :—   |    |
| 6.  | Loop absent in the male, poorly developed or absent in the female ; antenodal nervures 10-12 in number ; arc between antenodal nervures 2 and 3 .. .. .      | <i>Palæothemis tillyardi</i> .   |    |
|     |  | Genus— <i>Nannophya</i> :—   |    |
| 7.  | Loop absent in both sexes ; antenodal nervures only 5 in number ; arc between antenodal nervures 1 and 2 .. .. .   | <i>Nannophya pygmæa</i> .  | 8  |
|     |  | Wings of male with saffronated markings .. .. .  |    |
| 8.  | Wings of male without saffronated markings .. .. .   | <i>Tetrathemis yerburyi</i> .  |    |
|     |  | Base of wings of male as far as node golden yellow (slightly marked only in young specimens) .. .. .                               |    |
|     | The wings clouded with golden yellow about the node in both, this colour extending as far as the stigma in the hindwing but more limited in the fore .. .. . | <i>Tetrathemis aurea</i> .   |    |
|     |  | Genus— <i>Palpopleura</i> :—   |    |
| 9.  | Costal margin of forewing proximal to the node sinuously curved ; wings marked with golden yellow and black ; small species .. .. .                          | <i>Palpopleura sexmaculata</i>   | 10 |
|     |  | Costal margin of forewing straight .. .. .   |    |
| 10. | Nearly always supplementary nervures to the bridge and more than one cubital nervure to the hindwing .. .. .   |  | 11 |
|     |  | Only one nervure to the bridge and not more than one cubital nervure in the hindwing .. .. .                                       |    |
|     | Genus— <i>Cratilla</i> :—  | Thorax partly or wholly metallic ; discoidal field beginning with 3 rows of cells .. .. .  | 12 |
|     |  | Genus— <i>Libellula</i> :—   |    |
| 11. | Thorax non-metallic ; discoidal field beginning with 3 rows of cells. (Species from N. E. India and Kashmir) .. .. .   |  | 13 |
|     |  | Thorax non-metallic ; discoidal field beginning with 2 rows of cells (except in occasional species of <i>Lyriothemis</i> ) .. .. . |    |
| 12. | Thorax partly metallic ; apices of wings hyaline. <i>Cratilla lineata</i> .  | Thorax wholly metallic ; apices of wings black. .. <i>Cratilla metallica</i> .   |    |
|     |  | Wings with a spot of brown at the node and another at the stigma ; membrane white .. <i>Libellula quadrimaculata</i> .             |    |
| 13. | Wings unspotted ; membrane black .. .. .   | <i>Libellula fulva</i> .   |    |
|     |  | Genus— <i>Agrionoptera</i> :—  |    |
| 14. | Eyes broadly contiguous .. .. .  | <i>Agrionoptera insignis</i> .   | 15 |
|     |  | Eyes meeting only at a point .. .. .   |    |
| 15. | Genus— <i>Amphithemis</i> :—   | Trigone in forewing entire eighth nervure not arising from the posterior angle of trigone in                                       |    |

|     |   |    |
|-----|---|----|
|     | the hindwing; eighth abdominal segment in the female not dilated; abdomen slim and cylindrical .. ..  | 16 |
|     | Genus— <i>Lyriothemis</i> :—  |    |
| 15. | Trigone in forewing traversed once; eighth nerve arising from the posterior angle of trigone in hindwing; eighth abdominal segment in female dilated laterally; abdomen broad and stout .. .. | 19 |
| 16. | Discoidal field beginning with only a single row of cells .. .. .. <i>Amphithemis marice</i> .  | 17 |
| 17. | Discoidal field beginning with 2 rows of cells .. ..  | 17 |
| 17. | Abdomen short and cylindrical, red; superior anal appendages only slightly longer than the inferior .. .. .. <i>Amphithemis curvistyla</i> .  | 18 |
| 18. | Abdomen long and slim, yellow and black .. ..   | 18 |
| 18. | Superior anal appendages at least twice as long as inferior; abdomen longer than the hindwing .. .. <i>Amphithemis vacillans</i> .  |    |
| 18. | Superior anal appendages only slightly longer than the inferior; abdomen and hindwing of the same length .. .. .. <i>Amphithemis nigricolor</i> .   |    |
| 19. | Small species with 9-11 antenodal nervures to forewing; loop short .. .. ..   | 20 |
| 19. | Large species with 13-19 antenodal nervures to forewing; loop long .. .. ..   | 21 |
| 20. | Yellow antehumeral spots on thorax convergent above .. .. .. <i>Lyriothemis acigastra</i> .   |    |
| 20. | Antehumeral spots not convergent above .. .. .. <i>Lyriothemis mortoni</i> .  |    |
| 21. | Two to 3 cubital nervures in forewing; 2 rows of discoidal cells .. .. .. <i>Lyriothemis cleis</i> .  |    |
| 21. | Only 1 cubital nerve in forewing; 3 to 4 rows of discoidal cells .. .. ..   | 22 |
| 22. | No markings on front of thorax; bases of all wings with two well-marked brown rays .. .. <i>Lyriothemis bivittata</i> .   |    |
| 22. | Yellow antehumeral spots present on front of thorax; bases of wings unmarked or but poorly so .. .. .. <i>Lyriothemis tricolor</i> .  |    |
| 23. | Outermost antenodal nervure in forewing complete .. .. ..   | 24 |
| 23. | Outermost antenodal nervure in forewing incomplete .. .. ..   | 40 |
| 24. | Posterior lobe of prothorax fringed with long hairs and very large .. .. ..   | 25 |
| 24. | Posterior lobe of prothorax small or very small .. .. ..  | 37 |
|     | Genus— <i>Acisoma</i> :—  |    |
| 25. | Abdomen short, greatly inflated in its basal half, the apical part very slim and cylindrical; small species .. .. .. <i>Acisoma panorpoides</i> .   | 26 |
| 25. | Abdomen variable .. .. ..   | 26 |
| 26. | Genus— <i>Brachydiplax</i> :— .. ..   |    |
| 26. | Forehead and thorax metallic coloured .. .. ..  | 27 |
|     | Genus— <i>Orthetrum</i> :—  |    |
| 27. | No metallic colouring .. .. ..  | 28 |
| 27. | Forewing with 7 antenodal nervures; hindwing about 25 mm. in length .. .. .. <i>Brachydiplax sobrina</i> .  |    |
| 27. | Forewing with 7 antenodal nervures; hindwing about 30 mm. in length .. .. .. <i>Brachydiplax gestroi</i> .  |    |
| 27. | Forewing with 8-9 antenodal nervures; hindwing about 22 mm. in length .. .. .. <i>Brachydiplax farinosa</i> .   |    |

- Abdomen of male red; eighth nervure (Cuii) arising from posterior angle of trigone in hindwing .. .. . 29
- Abdomen of male pruinose blue; eighth nervure (Cuii) usually arising from posterior angle of trigone .. .. . 30
28. { Abdomen of male black marked with yellow, the base tumid and the anal segments flattened and dilated dorso-ventrally; eighth nervure (Cuii) arising distad to the posterior angle of trigone in the hindwing .. .. . *Orthetrum sabina*.
29. { Abdomen of male red overlaid with a thin pruinoscence giving it a violaceous tint .. .. . *Orthetrum pruinosum*.
- { Abdomen of male bright red; lamina of genitalia with a tuft of stout hairs springing from it, easily seen in profile .. .. . *Orthetrum chrysis*.
- { Abdomen of male bright red; lamina naked .. .. . *Orthetrum testaceum*.
30. { Eighth nervure arising distad to the posterior angle of trigone in the hindwing .. .. . *Orthetrum chryso stigma luzonicum*.
- { Eighth nervure arising from the posterior angle of trigone in hindwing .. .. . 31
31. { Sides of thorax pruinose, the yellow markings showing through; abdomen palest blue, almost white .. .. . *Orthetrum japonicum internum*.
- { Sides of thorax not pruinose, or if so, then no markings visible, abdomen a darker blue .. .. . 32
32. { Only 1 row of cells between *Rs* and *Rspl* .. .. . *Orthetrum anceps*.
- { Two rows of cells between *Rs* and *Rspl* .. .. . 33
33. { Smallest species of the genus with hindwing under 30 mm. in length; abdomen narrow and tapering 24 mm. .. .. . *Orthetrum læniolatum*.
- { Larger species with length of hindwing 36-38 mm, and of abdomen 29 mm, latter variable in shape, usually broad and depressed .. .. . 34
34. { Trigone in hindwing entire .. .. . 35
- { Trigone in hindwing traversed by a nervure .. .. . 36
35. { Abdomen long and narrow, entirely blue; hindwing with a small brown basal marking .. .. . *Orthetrum glaucum*.
- { Abdomen short and broad, the three anal segments black; no marking to base of hindwing (Kashmir) .. .. . *Orthetrum cancellatum*.
36. { Abdomen blue with the end segments black; hindwing with a blackish brown marking .. .. . *Orthetrum triangulare*.
- { Abdomen entirely blue; no marking basal to hindwing .. .. . *Orthetrum brunneum*.
- Genus—*Aethriamanta* :—
37. { Subtrigone of forewing formed of only 1 cell. .. .. . *Aethriamanta brevipennis*.
- { Subtrigone of forewing formed of 2 cells .. .. . 38
38. { Only 6 antenodal nervures in forewing .. .. . 39
- Genus—*Urothemis* :—
- { Seven antenodal nervures in forewing .. .. . *Urothemis signata signata*.
- Genus—*Selysiiothemis* :—
39. { Stigma white and black; neuration of wings whitish and almost invisible .. .. . *Selysiiothemis nigra*.
- Genus—*Macrodiplax* :—
- { Stigma brown; neuration black and distinct .. .. . *Macrodiplax cora*.

|     |   |   |   |
|-----|---|---|---|
|     | { | Discoidal field commencing with a row of 3 cells and then continued for a short distance as rows of 2 cells .. .. . | 41  |
| 40. | { | Discoidal field commencing with 2 or 3 cells and continued evenly as such .. .. .                                   | 43  |
|     | { | Genus— <i>Indothemis</i> :—   |   |
|     | { | Lobe of prothorax small; abdomen black with or without yellow markings .. .. .                                      | 42  |
| 41. | { | Genus— <i>Rhodothemis</i> :—  |   |
|     | { | Lobe of prothorax large; abdomen brilliant red. <i>Rhodothemis rufa</i> .   |   |
|     | { | Only 6 antenodal nervures to forewing; apices of wings hyaline .. .. .  | <i>Indothemis caesia</i> .                    |
| 42. | { | 13 antenodal nervures to forewing; apices of wings tipped with dark brown .. .. .                                   | <i>Indothemis limbata</i> .                   |
|     | { | Genus— <i>Onychothemis</i> :—   |   |
| 43. | { | Claws without any hooks .. .. .   | 44  |
|     | { | Claws with hooks .. .. .  | 45  |
|     | { | Ground colour of thorax deep black with a metallic lustre and bright yellow markings ..                             | <i>Onychothemis tonkinensis tonkinensis</i> . |
| 44. | { | Ground colour of thorax coppery brown with a coppery lustre and bright yellow markings ..                           | <i>Onychothemis culminicola culminicola</i> . |
| 45. | { | Apex of loop open .. .. .   | 46  |
|     | { | Apex of loop closed .. .. .   | 47  |
|     | { | Genus— <i>Zyxomma</i> :—  |   |
|     | { | Abdomen very slim except at extreme base which is very tumid, pale olivaceous brown ..                              | <i>Zyxomma petiolatum</i> .                   |
| 46. | { | Genus— <i>Tholymis</i> :—   |   |
|     | { | Abdomen short and stout, red; hindwings with an opalescent white patch about the middle ..                          | <i>Tholymis tillarga</i> .                    |
| 47. | { | Lobe of prothorax very large, fringed with long hairs .. .. .   | 48  |
|     | { | Lobe of prothorax very small .. .. .  | 54  |
|     | { | Genus— <i>Diplacodes</i> :—   |   |
| 48. | { | Discoidal field widely dilated at border of wing .. .. .  | 49  |
|     | { | Genus— <i>Sympetrum</i> :—  |   |
|     | { | Discoidal field strongly contracted at border of wing .. .. .   | 51  |
| 49. | { | Apices of wings of male tipped with deep black ..   | <i>Diplacodes nebulosa</i> .                  |
|     | { | Apices of wings hyaline .. .. .   | 50  |
| 50. | { | Base of hindwing with a black marking .. .. .   | <i>Diplacodes lefebvrei</i> .                 |
|     | { | Base of hindwing without marking .. .. .  | <i>Diplacodes trivialis</i> .                 |
| 51. | { | Forewings with $6\frac{1}{2}$ to $7\frac{1}{2}$ antenodal nervures .. .. .  | 52  |
|     | { | Forewings with $8\frac{1}{2}$ to $9\frac{1}{2}$ antenodal nervures .. .. .  | 53  |
|     | { | Thorax dull red in front, greenish yellow laterally; abdomen bright scarlet .. .. .                                 | <i>Sympetrum striolatum</i> .                 |
| 52. | { | Thorax red in front and laterally, with a bluish line in the middle of sides; abdomen bright scarlet .. .. .        | <i>Sympetrum fonscolombei</i> .               |
|     | { | Thorax black marked with bright yellow laterally .. .. .  | <i>Sympetrum commixtum</i> .                  |
|     | { | Thorax sandy yellow .. .. .   | <i>Sympetrum decoloratum</i> .                |
| 53. | { | Thorax bright citron yellow laterally .. .. .   | <i>Sympetrum hypomelas</i> .                  |
|     | { | Thorax dull red at the sides, smaller species ..  | <i>Sympetrum orientale</i> .                  |

- Genus—*Neurothemis* :—
54. { Two or more cubital nervures in all wings ; usually a great development of secondary neuration in the wings .. .. . 55  
 Only 1 cubital nerveure in all wings .. .. . 57
- Wings dark reddish brown with hyaline spaces at the apices .. .. . *Neurothemis fulvia*.  
 Base of wings golden yellow to a little beyond the level of trigone .. .. . *Neurothemis intermedia intermedia*.  
 Base of wings golden yellow nearly up to the stigma .. .. . *Neurothemis intermedia degener*.
55. { Wings golden brown (varying in intensity from light yellow to the darkest brown) as far as stigma, the border of the marking oblique inwardly in the hindwing .. .. . *Neurothemis fluctuans*.  
 Wings as for the last (*fluctuans*) but the border of the brown marking in the wings running straight back to the posterior margin of the wing .. .. . *Neurothemis terminata*.  
 Basal halves of wings deep black .. .. . 56
56. { Outward border of the black bordered with a white opalescent band .. .. . *Neurothemis tullia tullia*.  
 The black not bordered with white .. .. . *Neurothemis tullia feralis*.
- Genus—*Zygonyx* :—
57. { Very large species with the thorax metallic green, rest of body deep black marked with bright yellow .. .. . *Zygonyx iris*.  
 Thorax non-metallic, or dully so and entirely without markings .. .. . 58
- Genus—*Rhyothemis* :—
58. { Wings variegated with black and yellow or black without yellow, wings fragile, flight weak and fluttering like that of a butterfly .. .. . 59  
 Wings not variegated with black and yellow save for an occasional small basal marking, wings robust ; flight strong .. .. . 62
59. { Wings marked with black and golden yellow .. .. . 60  
 Wings marked with black only .. .. . 61  
 Wings brownish throughout with darker brown markings, small species .. .. . *Rhyothemis obsolescens*.
60. { Sexual differentiation very marked, the male with long narrow wings, female with short and broad wings .. .. . *Rhyothemis variegata*.  
 Sexual differentiation not marked, very similar in colouring to the last :—a well marked black spot at the node of both wings, the apices black, a spot over trigone in forewing and also in both wings over *Rs* and *Rspl*. Two broad dark fasciæ at base of hindwing .. .. . *Rhyothemis phyllis phyllis*.



61. { Only 2 rows of cells between *Rs* and *Rspl*, wings entirely black with a metallic lustre (except the extreme apices) .. .. . *Rhyothemis plutonia*.  
 Only 1 row of cells between *Rs* and *Rspl*, wings with only the basal halves black with a metallic lustre .. .. . *Rhyothemis triangularis*.
62. { Arc between antenodal nervures 2 and 3 .. .. . 63  
 Arc between antenodal nervures 1 and 2 .. .. . 64
63. { Genus—*Potamarcha* :—  
 Two rows of cells between *Rs* and *Rspl*, abdomen black marked with yellow or entirely pruinosed dark blue in adults .. .. . *Potamarcha obscura*.
64. { Genus—*Lathrecista* :—  
 Only 1 row of cells between *Rs* and *Rspl*, abdomen crimson, the basal 2 segments black or pruinosed blue .. .. . *Lathrecista asiatica*.  
 Discoidal field dilated .. .. . 65  
 Discoidal field contracted or of even width throughout .. .. . 67
65. { Genus—*Bradinyopyga* :—  
 Wings entirely hyaline; body mottled with black, grey and white; stigma black, white at both ends .. .. . *Bradinyopyga geminata*.  
 Genus—*Brachythemis* :—  
 Wings crossed medially by a broad orange band *Brachythemis contaminata*.
66. { Genus—*Crocothemis* :—  
 Wings with a small basal golden yellow marking, abdomen crimson or reddish yellow .. .. . 66  
 Abdomen crimson .. .. . *Crocothemis servilia*.  
 Abdomen golden yellow .. .. . *Crocothemis erythræa*.
67. { Genus—*Trithemis* :—  
 Wings short, the hind moderately broad at base; discoidal field strongly contracted; abdomen variable; usually small species, rarely indulging in prolonged flight and never soaring .. .. . 68  
 Wings long, the hind very broad at base; discoidal field contracted or of even width throughout; usually large robust insects indulging in long and soaring flight .. .. . 70
68. { Abdomen fusiform, rather broad and depressed, bright crimson .. .. . *Trithemis aurora*.  
 Abdomen slim and cylindrical or triquetral .. .. . 69
69. { Thorax and abdomen bright vermilion red, base of wings crossed by a broad band of reddish yellow .. .. . *Trithemis kirbyi*.  
 Thorax and abdomen black or dark violaceous from a thin coating of pruinescence .. *Trithemis festiva*.  
 Thorax golden brown; abdomen black marked with yellow; legs very long and slim; stigma bicolourous .. .. . *Trithemis pallidinervis*.
70. { Costal side of trigone in forewing shorter than half the inner side; no secondary close reticulation in hindwing .. .. . 71

|     |  |  |
|-----|--|--|
| 70. | Genus— <i>Camacinia</i> :—<br>Costal side of trigone in forewing longer than half the inner side ; a very close reticulation at base of hindwings .. .. .      | 75   |
|     |  | Stigma in forewing much longer than that of hind .. .. .   |
| 71. | Genus— <i>Hydrobasileus</i> :—<br>Stigma in forewing very slightly longer than that of hind ; a basal marking of orange running along posterior border .. .. . | <i>Hydrobasileus croceus</i> .   |
|     |  | Transverse ridges on abdominal segments 2 to 5 .. .. .   |
| 72. | Genus— <i>Tramea</i> :—<br>Transverse ridges on abdominal segments 2 to 4 only ; a dark opaque basal marking in hindwing .. .. .                               | 74   |
|     |  | Genus— <i>Pantala</i> :—<br>Only 2 rows of cells between <i>Rs</i> and <i>Rspl</i> in both wings ; 3 rows of cells in discoidal field .. |
| 73. | Genus— <i>Pseudotrimea</i> :—<br>Three rows of cells between <i>Rs</i> and <i>Rspl</i> , in both wings. Four rows of cells in discoidal field ..               | <i>Pseudotrimea prateri</i> .  |
|     |  | Basal marking of hindwing golden yellow enclosing a dark reddish brown spot .. .. .  |
| 74. | Basal marking in hindwing blackish brown without any surrounding zone of yellow ..   | <i>Tramea limbata</i> .  |
|     |  | Three rows of cells between <i>Rs</i> and <i>Rspl</i> , 5 to 8 rows of cells in discoidal field which is contracted .. .. .              |
| 75. | Only 1 row of cells between <i>Rs</i> and <i>Rspl</i> , 4 to 5 rows of cells in discoidal field which is dilated ..  | <i>Camacinia harterti</i> .  |
|     |  | Genus— <i>Hemicordulia</i> :—<br>Trigone of hindwing in line with or a little proximal to the arc .. .. .                                |
| 76. | Trigone of hindwing well distal of the arc .. .. .   | 77   |
|     |  | Genus— <i>Azuma</i> :—<br>Trigones and subtrigones traversed by one or more nervures .. .. .   |
| 77. | All trigones and subtrigones entire .. .. .  | 80   |
|     |  | Anterior half of wings at the base, as far out as the trigone blackish brown .. .. .   |
| 78. | No marking at base of wings .. .. .  | 79   |
|     |  | Four large yellow spots and a yellow band on face .. .. .  |
| 79. | A sinuous transverse yellow band on the face and a small spot near the eyes .. .. .  | <i>Azuma vittata</i> .   |
|     |  | A basal spot on epistome and six yellow spots on face .. .. .  |
| 80. | Genus— <i>Macromia</i> :—<br>Discoidal field begins with 2 or more rows of cells, loop broad, at least 3 cells wide .. .. .                                    | 81   |
|     |  | Discoidal field begins with only a single row of cells ; loop only 2 cells wide .. .. .  |
| 81. | Comparatively small species with hindwing under 40 mm. in length and abdomen under 40 mm. .. .. .  | 82   |
|     |  | Larger species with hindwing over 40 mm. in length and abdomen over 45 mm. .. .. .   |

|     |   |   |                                   |    |
|-----|---|---|-----------------------------------|----|
| 82. | { | Face pale yellow with black markings ; abdomen black ringed with bright yellow .. .. .  | <i>Macromia cingulata.</i>        |    |
|     |   | Face black traversed by a median yellow stripe ; abdomen black with paired spots of yellow which gradually decrease in size from the base to segment 6 .. .. .  |                                   | 83 |
| 83. | { | Labrum without a yellow spot at its base ; no yellow marking on segment 6 .. .. .   | <i>Macromioida.</i>               |    |
|     |   | Labrum with a bright yellow basal spot and a pair of small yellow dorsal spots on segment 6.  | <i>Macromia flavocolorata.</i>    |    |
| 84. | { | Front of thorax with a yellow humeral stripe .. .. .  |                                   | 85 |
|     |   | Front of thorax without a yellow humeral stripe .. .. .   |                                   | 88 |
| 85. | { | Abdominal segments 2 to 8 bearing broad diffuse yellow rings ; face bright yellow marked with blackish brown .. .. .  | <i>Macromia flavicincta.</i>      |    |
|     |   | Markings on abdomen variable but never with broad yellow rings on all segments from 2 to 8. .. .. .   |                                   | 86 |
| 86. | { | Face brown, unmarked .. .. .  | <i>Macromia ellisoni.</i>         |    |
|     |   | Face black marked with yellow .. .. .   |                                   | 87 |
| 87. | { | Segment 10 all yellow ; face black marked with yellow across the lower part of frons, this marking shaped like a pair of spectacles complete with its arms .. .. .  | <i>Macromia binocellata.</i>      |    |
|     |   | Segment 10 all black ; face with a transverse line and four spots of yellow .. .. .   | <i>Macromia atuberculata.</i>     |    |
| 88. | { | Superior anal appendages yellowish ; a broad yellow ring on abdominal segment 2, narrow and gradually decreasing on segments 3 to 6.  | <i>Macromia moorei.</i>           |    |
|     |   | Superior anal appendages black ; broad yellow rings on segments 2 and 3, narrow and gradually decreasing from 4 to 6 .. .. .  | <i>Macromia indica.</i>           |    |
|     |   | Superior anal appendages black ; a broad yellow ring on segment 2, narrow on 3 to 5, none at all on segment 6 .. .. .   | <i>Macromia trituberculata.</i>   |    |
| 89. | { | Genus— <i>Idionyx</i> :—  |                                   |    |
|     |   | Eighth abdominal segment not dilated in the female ; arc between antenodal nervures 1 and 2 in the forewing or opposite the 2nd ; vesicle and anal appendages variable .. .. .  |                                   | 90 |
| 90. | { | Genus— <i>Indomacromia</i> :—   |                                   |    |
|     |   | Eighth abdominal segment dilated in the female ; arc between the second and third antenodal nervures in the forewing ; vesicle low and rounded ; inferior anal appendage with a very long robust spine on either side of its middle, the apex notched .. .. . | <i>Indomacromia nilgiriensis.</i> |    |
| 90. | { | Superior anal appendages tapering, no spine beneath .. .. .   |                                   | 91 |
|     |   | Superior anal appendages broad and a little bifid at the end, a small spine beneath the middle third ; inferior appendage with a long, robust spine on either side, the apex pointed. Female with the bases of wings bright golden yellow .. .. .             | <i>Idionyx optata.</i>            |    |

|      |  |                                     |
|------|--|-------------------------------------|
| 91.  | { Vesicle in the female very high and conical .. .. .  | 92                                  |
|      | { Vesicle in the female very low and rounded .. .. .   | 93                                  |
| 92.  | { Vesicle in the female resembling the horn of a rhinoceros, greatly lengthened and prominent; inferior anal appendage with a small spine on either side near the apex .. .. . | <i>Idionyx corona nilgiriensis.</i> |
|      | { Vesicle similar to last but with its apex in front indented .. .. .  | <i>Idionyx corona corona.</i>       |
|      | { Vesicle in female very high and conical but not strikingly prominent as in the last .. .. .  | <i>Idionyx ornata.</i>              |
| 93.  | { Humeral line present on front of thorax of female .. .. .  | <i>Idionyx nadgani.</i>             |
|      | { Humeral line absent; inferior anal appendage without lateral spines .. .. .  | <i>Idionyx yolanda.</i>             |
|      | Subfamily— <i>Aeschninae</i> :—  |                                     |
| 94.  | { Eyes broadly contiguous .. .. .  | 165                                 |
|      | { Eyes more or less widely separated or only just meeting .. .. .  | 95                                  |
|      | { Mid-lobe of labrum with a deep median fissure .. .. .  | 96                                  |
| 95.  | Subfamily— <i>Gomphinae</i> :—   |                                     |
|      | { Mid-lobe of labrum entire .. .. .  | 103                                 |
|      | Subfamily— <i>Cordulegasterinae</i> :—   |                                     |
| 96.  | { Median (basal) space without cross veins .. .. .   | 97                                  |
|      | Subfamily— <i>Chlorogomphinae</i> :—   |                                     |
|      | { Median space traversed .. .. .   | 101                                 |
|      | Genus— <i>Cordulegaster</i> :—   |                                     |
|      | { Head transversely elongate; frons not as high as occiput; stigma short .. .. .   | 98                                  |
| 97.  | Genus— <i>Anotogaster</i> :—   |                                     |
|      | { Head globose; frons as high as occiput; stigma long .. .. .  | 100                                 |
|      | Genus— <i>Allogaster</i> :—  |                                     |
|      | { Frons greatly developed, very high and almost as wide as eyes; stigma long .. .. .   | <i>Allogaster latifrons.</i>        |
| 98.  | { Face pale brown, unmarked .. .. .  | <i>Cordulegaster parvistigma.</i>   |
|      | { Face bright yellow, marked with black .. .. .  | 99                                  |
| 99.  | { Abdominal segments 4 to 9 with sub-basal yellow lunules and small apical linear spots .. .. .  | <i>Cordulegaster brevistigma.</i>   |
|      | { Abdominal segments 4 to 9 with smaller yellow lunules and without apical spots .. .. .   | <i>Cordulegaster bidentatus.</i>    |
| 100. | { Venation yellow; 10th abdominal segment marked with yellow .. .. .   | <i>Anotogaster basalis.</i>         |
|      | { Venation black; 10th abdominal segment unmarked .. .. .  | <i>Anotogaster nipalensis.</i>      |
|      | Genus— <i>Orogomphus</i> :—  |                                     |
| 101. | { Hindwing very much broader than forewing .. .. .   | <i>Orogomphus zanthoptera</i>       |
|      | { Fore and hind wings not markedly differing in breadth .. .. .  | 102                                 |
| 102. | { Thorax with 3 lateral yellow stripes .. .. .   | <i>Orogomphus speciosus.</i>        |
|      | { Thorax with only 2 lateral stripes .. .. .   | <i>Orogomphus atkinsoni.</i>        |
| 103. | { Subtriangle of forewing and hypertrigones traversed .. .. .  | 104                                 |
|      | { Subtriangle of forewing and all hypertrigones free .. .. .   | 111                                 |

|      |  |                               |
|------|--|-------------------------------|
|      | Genus— <i>Ictinus</i> :—   |                               |
| 104. | Lateral margins of eighth abdominal segment with lateral foliate dilatations .. .. .   | 105                           |
|      | Genus— <i>Gomphidia</i> :—   |                               |
|      | Lateral margins of eighth abdominal segment not foliately dilated .. .. .  | 110                           |
| 105. | Face largely black; hinder border of thorax black; femora largely black or brown .. .. .   | 106                           |
|      | Face largely yellow; hinder border of thorax yellow; femora largely yellow .. .. .   | 109                           |
| 106. | Epistome without a yellow spot; eighth abdominal segment without a yellow ring .. <i>Ictinus pertinax</i> .  |                               |
|      | Epistome with a median yellow spot and eighth abdominal segment with a yellow ring .. .. .   | 107                           |
| 107. | Lateral black stripes on thorax joined at their middles so that the yellow is reduced between them to an upper and lower spot .. .. <i>Ictinus rapax mordax</i> .  |                               |
|      | Lateral black stripes on thorax separated .. .. .  | 108                           |
| 108. | Black at base of upper surface of frons connected with the black on front of frons; yellow annule on abdominal segment 3 occupying only the basal third .. .. <i>Ictinus rapax præcox</i> .                                  |                               |
|      | Black at base of upper surface of frons not connected with the black on front of frons; yellow annule on abdominal segment 3 occupying the basal half .. .. <i>Ictinus rapax rapax</i> .                                     |                               |
| 109. | Labrum not bordered with black; back of head black; lateral expansion of eighth abdominal segment marked with yellow .. .. <i>Ictinus atrox</i> .  |                               |
|      | Labrum bordered with black; back of head black and yellow; lateral expansion of eighth abdominal segment unmarked .. .. <i>Ictinus angulosus</i> .   |                               |
| 110. | Face yellow .. .. .  | <i>Gomphidia T-nigrum</i> .   |
|      | Face largely black .. .. .   | <i>Gomphidia abbotti</i> .    |
| 111. | Superior anal appendages branched .. .. .  | 112                           |
|      | Superior anal appendages unbranched .. .. .  | 115                           |
|      | Genus— <i>Microgomphus</i> :—  |                               |
| 112. | Small species with abdomen not longer than 25 mm.; ninth abdominal segment shorter than the eighth .. .. .   | 113                           |
|      | Genus— <i>Macrogomphus</i> :—  |                               |
|      | Large species with abdomen about 50 mm. in length; 9th abdominal segment greatly elongated, longer than the eighth .. .. .   | 114                           |
| 113. | A single medial stripe on sides of thorax; dorsal thoracic stripes not connected with the mesothoracic collar .. .. <i>Microgomphus torquatus</i> .  |                               |
|      | A single medial stripe on sides of thorax forming a "Y" with another short stripe which meets it obliquely at its middle dorsal thoracic stripes connected with mesothoracic collar .. .. <i>Microgomphus lilliputians</i> . |                               |
|      | Two fine lateral stripes outlining the lateral sutures of thorax .. .. .   | <i>Microgomphus loogali</i> . |

|      |  |  |                                    |
|------|--|--|------------------------------------|
|      | Sides of thorax yellow, the sutures finely outlined in black; juxta-humeral stripe present in its upper part .. .. .   | .. .. .  | <i>Macrogomphus montanus.</i>      |
|      |  | A broad black stripe on sides of thorax; juxta-humeral stripe absent; 9th abdominal segment unmarked .. .. . | <i>Macrogomphus robustus.</i>      |
| 114. | A broad black stripe on sides of thorax; juxta-humeral ninth stripe represented by a small upper spot; 9th abdominal segment with a small yellow lateral spot .. .. .                          | .. .. .  | <i>Macrogomphus annulatus.</i>     |
|      | Trigone of hindwing and occasionally that of forewing also, traversed by a nervure .. .. .   | .. .. .  | 116                                |
| 115. |  | All trigones entire .. .. .  | 118                                |
|      | Genus— <i>Perissogomphus</i> :—  |  |                                    |
|      | No basal antenodal nervure of second series present; 2 rows of cells in anal area of forewing; 2 rows of discoidal cells to beyond level of node .. .. .                                       | .. .. .  | <i>Perissogomphus stevensi.</i>    |
| 116. | Genus— <i>Davidius</i> :—  |  |                                    |
|      | Basal antenodal nervure of second series usually present; only a single row of cells in anal area of forewing; 3 rows of discoidal cells at level of node .. .. .                              | .. .. .  | 117                                |
|      | Mesothoracic collar coalescent with a short band on the lower part of middorsal carina, rest of dorsum of thorax black .. .. .   | .. .. .  | <i>Davidius davidi assamensis.</i> |
|      | Mesothoracic collar and antehumeral stripes coalescent forming a broad middorsal band; a fine humeral line also present .. .. .  | .. .. .  | <i>Davidius aberrans.</i>          |
|      | Middorsal carinal band connected with mesothoracic collar; antehumeral band represented by a small upper cuneiform spot only .. .. .   | .. .. .  | <i>Davidius davidi davidi.</i>     |
| 117. | Antehumeral bands separated from each other but connected to a broken mesothoracic collar; humeral band represented by a small upper spot and a lower fine stripe .. .. .                      | .. .. .  | <i>Davidius stevensi.</i>          |
|      | Mesothoracic collar connected to a band on the middorsal carina; antehumeral stripes present slightly dilated above; humeral stripe represented by an upper spot and fine lower stripe .. .. . | .. .. .  | <i>Davidius zalloreensis.</i>      |
|      | Genus— <i>Anormogomphus</i> :—   |  |                                    |
| 118. | Base of hindwing rounded in both sexes. .. .. .  | .. .. .  | <i>Anormogomphus heteropterus.</i> |
|      | Base of hindwing in male strongly angulated and notched .. .. .  | .. .. .  | 119                                |
| 119. | Superior and inferior anal appendages both divaricate and of about equal length .. .. .  | .. .. .  | 120                                |
|      | Only the inferior appendages divaricate or neither .. .. .   | .. .. .  | 131                                |
|      | Genus— <i>Platygomphus</i> :—  |  |                                    |
| 120. | Abdominal segments 7, 8 and 9 widely dilated; base of hindwing in male only slightly excavate .. .. .  | .. .. .  | 121                                |
|      | Abdominal segments 7, 8 and 9 only slightly or not at all dilated; base of hindwing in male deeply excavate .. .. .  | .. .. .  | 122                                |

- Abdominal segments 3-8 with confluent dorsal spots and basal rings .. .. . *Platygomphus dolobratus*.
121. { Abdominal segments 5-7 with basal rings only .. *Platygomphus feae*.
- Abdominal segments 3-6 with a narrow basal ring connected to a fine dorsal line; segment 7 with a broad basal ring tapering to the apex .. .. . *Platygomphus martini*.
- Genus—*Gomphus* :—
- Large species with abdomen over 40 mm. in length; superior and inferior anal appendages equally divaricate .. .. . 123
122. { Genus—*Burmagomphus* :—
- Smaller species with abdomen less than 40 mm. in length; inferior anal appendages distinctly more divaricate than the superior .. .. . 129
- Genus—*Ophiogomphus* :—
- Palaeartic species from Kashmir with characters resembling *Gomphus* but with an ill-defined loop in the anal area of hindwing .. .. *Ophiogomphus reductus*.
123. { Dorsal thoracic stripes connected with the mesothoracic collar .. .. . 124
124. { Dorsal thoracic stripes not connected with mesothoracic collar .. .. . 128
124. { Anal appendages bright yellow .. .. *Gomphus cyanofrons*.
125. { Anal appendages black .. .. . 125
125. { Vestigial antehumeral stripe present as a spot or short stripe .. .. . 126
- Antehumeral stripe entirely absent .. .. *Gomphus nilgiricus*.
126. { Lateral sutures of thorax heavily outlined in black, these sometimes almost coalescent .. .. . 127
127. { Lateral sutures of thorax finely outlined in black that of anterior suture broadly interrupted in its middle .. .. *Gomphus personatus*.
127. { Mesothoracic collar broadly interrupted .. *Gomphus xanthenatus*.
127. { Mesothoracic collar only finely or not interrupted .. .. *Gomphus o'doneli*.
128. { Stigma black, unbraced; mesothoracic collar only slightly interrupted .. .. *Gomphus promelas*.
128. { Stigma yellow, unbraced; mesothoracic collar widely interrupted .. .. *Gomphus ceylonicus*.
128. { Stigma black, braced; mesothoracic collar not interrupted .. .. *Gomphus laidlawi*.
129. { Humeral lines represented by a small upper spot of yellow; antehumeral lines straight, connected with the mesothoracic collar .. *Burmagomphus duarensis*.
129. { Humeral lines absent; antehumeral lines sinuous, not connected with the mesothoracic collar .. .. . 130
- Humeral line well defined; antehumeral lines straight, not connected with the mesothoracic collar .. .. *Burmagomphus sivalikensis*.
130. { Mesothoracic collar slightly interrupted in the middle line; dorsal stripes on abdominal segments 3-5 .. .. *Burmagomphus vermiculatus*.
130. { Mesothoracic collar broadly contiguous; no dorsal stripes on abdominal segments 3-5 .. *Burmagomphus pyramidalis*.

|      |  |     |  |
|------|--|-----|--|
|      | Genus— <i>Heterogomphus</i> . 1—   |     |  |
| 131. | Three rows of cells between <i>Mi</i> and <i>Mia</i> at level of outer end of stigma ; anal appendages directed straight back, the inferior with a small spine on the inner side of its apex .. .. | 132 |  |
|      | Not more than 2 rows of cells between <i>Mi</i> and <i>Mia</i> ; anal appendages variable .. ..  | 135 |  |
| 132. | Antehumeral stripes meeting the mesothoracic collar .. ..  | 133 |  |
|      | Antehumeral stripes not meeting the mesothoracic collar .. ..  | 134 |  |
| 133. | Hindwing 50 mm. in length ; abdomen 58 mm. .. <i>Heterogomphus smithii</i> .   |     |  |
|      | Hindwing 40 mm. in length ; abdomen 47 mm. .. .. <i>Heterogomphus bicornutus</i> .   |     |  |
| 134. | Medial black stripe on sides of thorax spotted with yellow .. .. <i>Heterogomphus risi</i> .   |     |  |
|      | Medial black stripe on side of thorax .. <i>Heterogomphus ceylonicus</i> .   |     |  |
| 135. | More than 2 transverse nervures between <i>Mi-iii</i> and <i>Miv</i> in the hindwing .. ..   | 136 |  |
|      | Only 1 transverse nervure between <i>Mi-iii</i> and <i>Miv</i> in hindwing .. ..   | 141 |  |
|      | Genus— <i>Heliogomphus</i> :—  |     |  |
| 136. | Superior anal appendages lyre-shaped as seen together, tapering and curling like the horn of a cow seen individually ; basal antenodal nervure of second series absent .. ..                       | 137 |  |
|      | Genus— <i>Leptogomphus</i> :—  |     |  |
|      | Superior anal appendages subtriangular with a basal and outwardly inclined tooth ; basal antenodal nervure of second series present .. ..  | 139 |  |
| 137. | Two straight parallel dorsal thoracic stripes not connected with the mesothoracic collar ; seventh abdominal segment with basal marking .. ..  | 138 |  |
|      | Two oval dorsal thoracic spots converging above, seventh abdominal segment unmarked .. <i>Heliogomphus spirillus</i> .   |     |  |
| 138. | Occiput bearing a yellow spot ; seventh abdominal segment with basal triangular spots .. <i>Heliogomphus nietneri</i> .  |     |  |
|      | Occiput black, thorax heavily pruinosed beneath ; seventh abdominal segment with broad basal ring .. .. <i>Heliogomphus pruinans</i> .   |     |  |
| 139. | Dorsal stripes connected with mesothoracic collar ; antehumeral stripe interrupted .. <i>Leptogomphus maculivertex</i> .   |     |  |
|      | Dorsal stripes not connected with mesothoracic collar ; antehumeral stripe complete .. ..  | 140 |  |
| 140. | Abdominal segments 3-5 bearing a fine dorsal stripe or entirely black .. .. <i>Leptogomphus gestroi</i> .  |     |  |
|      | Abdominal segments 3-5 bearing lateral spots or rings .. .. <i>Leptogomphus inclitus</i> .   |     |  |
| 141. | Inferior anal appendages divaricate, cleft to the base .. ..   | 142 |  |
|      | Inferior anal appendages not divaricate, variable .. ..  | 148 |  |
| 142. | Genus— <i>Anisogomphus</i> :—  |     |  |
|      | Superior anal appendages yellow, very small, parallel, closely apposed, with a downwardly  |     |  |



|      |   |  |
|------|---|--|
|      | directed black basal process; no basal antenodal nervure of 2nd series .. .. .  | 143  |
|      | Genus— <i>Temnogomphus</i> :—<br>Superior anal appendages small, yellow, parallel but not closely apposed and without basal process; basal antenodal nervure of second series present .. .. .   | <i>Temnogomphus bivittatus.</i>            |
| 142. | Genus— <i>Indogomphus</i> :—<br>Superior anal appendages lyrate like those of <i>Heliogomphus</i> ; abdominal segment 9 as long as segment 8 .. .. .  | <i>Indogomphus longistigma.</i>            |
|      | Genus— <i>Cyclogomphus</i> :—<br>Superior anal appendages small, closely apposed, no basal process present; basal antenodal nervure of second series present; very small species with abdomen not longer than 28 mm., dilated fusiformly at the end .. .. . | 144  |
| 143. | Black bands on sides of thorax very thick; dorsal bands not confluent with upper end of antehumeral stripe .. .. .  | <i>Anisogomphus occipitalis.</i>           |
|      | Black bands on sides of thorax very fine; dorsal bands confluent with upper end of antehumeral stripe .. .. .   | <i>Anisogomphus orites.</i>                |
| 144. | Face largely black; a yellow spot on vertex .. .. .   | <i>Cyclogomphus verticalis.</i>            |
|      | Face largely yellow; no spot on vertex .. .. .  | 145  |
| 145. | Very small species with abdomen 22 mm. in length, hindwing 21 mm. .. .. .   | <i>Cyclogomphus minusculus.</i>            |
|      | Larger species with abdomen 25 mm. or more in length, hindwing 25 mm. or more .. .. .   | 146  |
| 146. | A black Y-shaped mark on sides of thorax .. .. .  | <i>Cyclogomphus heterostylus.</i>          |
|      | No black Y-shaped mark on sides of thorax .. .. .   | 147  |
| 147. | Hindwing 25 mm. long .. .. .  | <i>Cyclogomphus vesiculosus.</i>           |
|      | Hindwing 29 mm. long .. .. .  | <i>Cyclogomphus ypsilon.</i>               |
|      | Genus— <i>Stylogomphus</i> :—<br>Superior anal appendage long, sinuous, tapering, black inferior appendage black, left slightly at apex .. .. .   | <i>Stylogomphus inglisi.</i>               |
| 148. | Genus— <i>Lamellogomphus</i> :—<br>Inferior anal appendage as long as or longer than the superior, both separated at the base, converging at the apices, long and forcipated. .. .. .   | 149  |
|      | Genus— <i>Onychogomphus</i> :—<br>Inferior anal appendage shorter than, often much more so, than the superiors, both closely apposed .. .. .  | 152  |
|      | Humeral stripe absent .. .. .   | 150  |
| 149. | Humeral stripe present .. .. .  | <i>Lamellogomphus biforceps biforceps.</i> |

|      |   |   |   |
|------|---|---|---|
| 150. | { | Dorsal bands isolated, not connected with meso-thoracic collar .. .. .  | 157   |
|      |   | Dorsal bands connected with mesothoracic collar .. .. .   | <i>Lamellogomphus biforceps nilgiriensis.</i> |
| 151. | { | Legs entirely black ; labrum marked with yellow spots .. .. .   | <i>Lamellogomphus biforceps acinaces.</i>     |
|      |   | Legs marked with yellow ; labrum unmarked   | <i>Lamellogomphus biforceps sp. Laid.</i>     |
| 152. | { | Dorsal thoracic stripes not connected to meso-thoracic collar .. .. .   | 153   |
|      |   | Dorsal thoracic stripes connected to mesothoracic collar .. .. .  | 158   |
| 153. | { | Dorsal thoracic stripes short and oval .. .. .  | 154   |
|      |   | Dorsal thoracic stripes elongate, not oval .. .. .  | 156   |
| 154. | { | Anal appendages black .. .. .   | <i>Onychogomphus lindgreni.</i>               |
|      |   | Anal appendages yellow .. .. .  | 155   |
| 155. | { | Ninth abdominal segment entirely black .. .. .  | <i>Onychogomphus frontalis.</i>               |
|      |   | Ninth abdominal segment marked with yellow .. .. .  | <i>Onychogomphus lineatus.</i>                |
| 156. | { | Abdominal segments 3-6 black marked with narrow basal yellow rings, abdomen and hindwing less than 30 mm. .. .. .               | <i>Onychogomphus modestus.</i>                |
|      |   | Abdominal segments 3-6 black marked with very broad basal yellow rings, abdomen and hindwing more than 30 mm. in length .. .. . | 157   |
| 157. | { | Occiput bearing 2 small black spines .. .. .  | <i>Onychogomphus cerastes.</i>                |
|      |   | Occiput bearing 10 to 12 small spines .. .. .   | <i>Onychogomphus echinoccipitalis.</i>        |
| 158. | { | Many of the cross nervures at base of wing pale yellow .. .. .  | <i>Onychogomphus sp. Laid.</i>                |
|      |   | None of the basal cross nervures yellow .. .. .   | 159   |
| 159. | { | Sixth abdominal segment with less than the basal half yellow .. .. .  | 160   |
|      |   | Sixth abdominal segment with the basal half or more yellow .. .. .  | 164   |
| 160. | { | Lateral black stripes on thorax entirely confluent .. .. .  | 161   |
|      |   | Lateral black stripes on sides of thorax only partially confluent .. .. .   | 162   |
| 161. | { | Abdominal segments 3-7 with the basal fifth yellow .. .. .  | <i>Onychogomphus mac-lachlani.</i>            |
|      |   | Abdominal segments 3-6 with the basal fourth yellow, segment 7 with the basal half yellow                                       | <i>Onychogomphus saundersii.</i>              |
| 162. | { | Face largely black, epistome black marked with yellow .. .. .   | 163   |
|      |   | Face largely yellow, epistome yellow marked with black .. .. .  | <i>Onychogomphus circularis.</i>              |

|      |   |   |  |
|------|---|---|--|
| 163. | { | Abdominal segments 8-10 all black .. .. <i>Onychogomphus annularis</i> .  |  |
|      |   | Abdominal segments 8-10 black marked laterally with yellow .. .. . <i>Onychogomphus flavum</i> .  |  |
| 164. | { | Occiput black; antehumeral line complete .. <i>Onychogomphus bistrigatus</i> .  |  |
|      |   | Occiput with a yellow spot; antehumeral line vestigial .. .. . <i>Onychogomphus aureus</i> .  |  |
| 165. | { | Anal border of the hindwing rounded in both sexes; <i>Rs</i> not bifurcated; <i>Mii</i> with an abrupt convexity forwards at outer end of stigma; sectors of arc arising above the middle of arc. .. .. . 166                           |  |
|      |   | Anal border of hindwing rounded in the female only; <i>Rs</i> bifurcated (except in <i>Jagoria</i> ); <i>Mii</i> uniformly curved as far as the hind margin of wing; sectors of arc arising from or below the middle of arc .. .. . 172 |  |
| 166. | { | Genus— <i>Hemianax</i> :—<br>Only a single lateral longitudinal ridge on abdominal segments 4 to 8, no supplementary ridge above it .. .. . <i>Hemianax ephippiger</i> .  |  |
|      |   | Genus— <i>Anax</i> :—<br>Lateral supplementary ridges to segments 4 to 6 .. .. . 167  |  |
| 167. | { | Thorax laterally sky-blue with anterior and median black stripes .. .. . <i>Anax immaculifrons</i> .  |  |
|      |   | Thorax laterally green or pale brown without markings .. .. . 168   |  |
| 168. | { | Inferior anal appendages half the length of superior .. .. . 169  |  |
|      |   | Inferior anal appendages much less than half the length of superiors .. .. . 170  |  |
| 169. | { | Anal appendages of female long and pointed .. <i>Anax guttatus</i> .  |  |
|      |   | Anal appendages of female very short and spatulate, rounded at the tips .. .. <i>Anax goliathus</i> .   |  |
| 170. | { | Inferior anal appendages one-third the length of superior; a black T-shaped mark on upper surface of forehead .. .. . <i>Anax parthenope bacchus</i> .  |  |
|      |   | Inferior anal appendage only one-fourth the length of superior; no T-shaped mark on upper surface of forehead .. .. . 171   |  |
| 171. | { | Crest of frons with a transverse brown stripe bordered behind with yellow; membrane white .. .. . <i>Anax parthenope parthenope</i> .   |  |
|      |   | Crest of frons with a brown transverse stripe bordered behind with blue; membrane black, white at base .. .. . <i>Anax parthenope julius</i> .  |  |
| 172. | { | Basal space traversed by several nervures .. .. . 173   |  |
|      |   | Basal space entire .. .. . 179  |  |
| 173. | { | Dentigerous plate of female rounded and sub-denticulate .. .. . 174   |  |
|      |   | Dentigerous plate forked .. .. . 177  |  |

174. { Genus—*Amphicæschna* :—  
 Frons only normally developed ; anal superior  
 appendages shaped like a kukri, strongly  
 indented on the inner side .. .. . *Amphicæschna beesoni*.
175. { Genus—*Cephalæschna* :—  
 Frons remarkably developed ; anal appendages  
 lanceolate .. .. . 175  
 Frons projecting markedly like the bows of a  
 ship ; frons and face unmarked, yellow .. .. . *Cephalæschna acuti-*  
*frons*.
175. { Frons projecting markedly in a rounded or  
 globular form ; face yellow above, black  
 below the labrum with two small yellow  
 spots .. .. . *Cephalæschna orbifrons*.
176. { Frons yellow and black .. .. . 176  
 Frons shiny black in front .. .. . *Cephalæschna lugubris*.  
 Frons yellow in front .. .. . *Cephalæschna masoni*
177. { Genus—*Periæschna* :—  
 Trigones of forewings long, of 5 to 6 cells ;  
 thorax dark brown marked with yellow  
 stripes .. .. . *Periæschna magdalencæ*.
178. { Genus—*Gynacanthæschna* :—  
 Trigones of forewings shorter, of 3 to 4 cells  
 only ; thorax brown or black marked with  
 green stripes .. .. . 178  
 Face bright greenish yellow ; anal superior  
 appendages long, dilated, blunt tipped .. .. . *Gynacanthæschna viridifrons*.
179. { Face olivaceous brown ; anal superior ap-  
 pendages short and filiform .. .. . *Gynacanthæschna sikkima*.
179. { Genus—*Jagoria* :—  
*Rs* not forked .. .. . *Jagoria martini*.  
*Rs* forked .. .. . 180
180. { Genus—*Austroæschna* :—  
 Only 1 row of cells between *Rs* and *Rspl* .. .. . *Austroæschna inter-*  
*sedens*.
181. { Three to 7 rows of cells between *Rs* and *Rspl* .. .. . 181  
 Genus—*Anaciæschna* :—  
 Base of hindwing subrounded ; *Mii* making an  
 abrupt curve towards the costa beneath the  
 stigma as in *Anax* .. .. . 182  
 Base of hindwing more or less angulated and  
 excavated .. .. . 183
182. { Wings hyaline ; sides of thorax yellowish .. .. . *Anaciæschna jaspidea*.  
 Wings deeply saffronated, the bases dark  
 brown ; sides of thorax apple green .. .. . *Anaciæschna donaldi*.
183. { Genus—*Æschna* :—  
 Dentigerous plate in the female rounded and  
 denticulate or subdenticulate or elongate .. .. . 184  
 Genus—*Gynæantha* :—  
 Dentigerous plate in female prolonged as a two-  
 pronged fork .. .. . 189
184. { Dentigerous plate of female elongate and  
 spoutlike, the hinder border furnished with a  
 number of robust teeth .. .. . 185

184. { Dentigerous plate of female rounded and sub-denticulate .. .. . 186  
 { Superior anal appendages narrow but broadening widely at the apex and expanded abruptly into a hawk's bill-like process; a robust spine on the dorsum of tenth segment .. .. *Aeschna ornithocephala.*
185. { Superior anal appendages broad and spatulate; only a poorly developed spine on dorsum of tenth segment .. .. *Aeschna erythromelas.*
186. { Antehumeral stripes on thorax green .. .. . 187  
 { Antehumeral stripes bright yellow .. .. . 188
187. { Sides of thorax entirely bright green; a small spine on dorsum of tenth segment; anal appendages narrow and tapering .. .. *Aeschna viridis.*  
 { Sides of thorax with two broad yellow stripes; no spine on tenth segment; superior anal appendages very broad and leaf-like .. .. *Aeschna petalura.*
188. { Very large insects with total length of 74 mm., robust sharp spine on dorsum of tenth segment .. .. *Aeschna juncea.*  
 { Smaller insects with total length of 64 mm.; only a poorly developed spine on dorsum of tenth segment .. .. *Aeschna mixta.*
189. { Inferior anal appendages more than half the length of superiors .. .. *Gynacantha khasiaca.*  
 { Inferior anal appendages less than one-third the length of superiors, usually one-fourth or one-fifth .. .. . 190  
 { Inferior anal appendages more than one-third but less than half the length of superiors.. .. . 191
190. { Superior anal appendages with the basal three-fourths slender, the apical fourth dilated and spatulate, the apex slightly rounded; bases of wings marked with dark brown rays .. .. *Gynacantha basiguttata.*  
 { Superior anal appendages with the basal and apical thirds dilated, the middle third slightly constricted, the apex pointed; wings hyaline at the base .. .. *Gynacantha subinterrupta.*
191. { Abdomen not constricted at the third segment, unmarked save for some green on segments 1 and 2; frons unmarked .. .. *Gynacantha millardi.*  
 { Abdomen with a slight constriction at the third segment, marked with yellow, green or blue on most segments; frons marked above with a black T-shaped mark or an anterior bordering of black .. .. . 192
192. { Superior anal appendages as seen from above markedly sinuous; abdomen only slightly constricted at the third segment; legs reddish .. .. *Gynacantha furcata.*  
 { Superior anal appendages as seen from above more or less straight; third abdominal segment variable; legs yellow or brown .. .. . 193

|      |   |  |                                |     |
|------|---|--|--------------------------------|-----|
| 193. | } | Length of hindwing less than 40 mm. in length; abdomen not more than 42 mm. in length .. .. .  | .. ..                          | 194 |
| 193. |   | Length of hindwing more than 40 mm. in length; abdomen not less than 45 mm. in length, usually much longer .. .. .                             | .. ..                          | 195 |
| 194. | } | Abdomen 41 mm. hindwing 39 mm. olivaceous brown marked with darker brown and black   | <i>Gynacantha o'doneli.</i>    |     |
|      |   | Abdomen 42 mm. hindwing 35 mm. body reddish brown spotted with green .. ..   | <i>Gynacantha saltatrix.</i>   |     |
| 195. | } | Frons bordered above in front with blackish brown; 18 to 21 antenodal nervures to forewing; 3rd abdominal segment slightly constricted .. .. . | <i>Gynacantha bayadera.</i>    |     |
|      |   | Frons with a blackish brown T-shaped mark above; 24 to 34 antenodal nervures to forewing; third abdominal segment markedly constricted .. .. . | .. ..                          | 196 |
| 196. | } | Abdomen blackish brown above, reddish beneath, unmarked save for some dark brown rings at apex of segments .. ..                               | <i>Gynacantha hyalina.</i>     |     |
|      |   | Abdomen black and grey marked with blue spots .. .. .  | .. ..                          | 197 |
| 197. | } | Abdomen and hindwing of approximately the same length (about 44 mm.); blue markings on segments 3 to 7 obscure .. .. .                         | <i>Gynacantha hanu-mana.</i>   |     |
|      |   | Abdomen longer than the hindwing (about 50 mm. compared to 47 or less); blue markings on segments 3 to 7 well defined .. .. .                  | <i>Gynacantha bainbriggei.</i> |     |

(To be continued.)